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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,224	09/02/2004	Paul A. Hyde	BUR920030186US1	5223
44152	7590	11/24/2006	EXAMINER	
GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARK DRIVE RESTON, VA 20191			CHARIOUI, MOHAMED	
			ART UNIT	PAPER NUMBER
			2857	

DATE MAILED: 11/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/711,224

Applicant(s)

HYDE ET AL.

Examiner

Mohamed Charioui

Art Unit

2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-35 and 37-59 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18, 24-35, 37-43 and 47-59 is/are rejected.
- 7) ☒ Claim(s) 19-23 and 44-46 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/5/06</u> . | 6) <input type="checkbox"/> Other: _____  |

1. Applicant cancelled claim 36.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 101*

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

**Claims 1-24 and 54** are rejected under 35 U.S.C. 101 because the claimed invention as a whole must accomplish a practical application. That is it must produce a "useful, concrete and tangible result." State Street, 149 F.3d at 1373, 47 USPQ2d at 1601-02. The purpose of this requirement is to limit patent protection to inventions that possess a certain level of "real world" value, as opposed to subject matter that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research (Brenner v. Manson, 383 U.S. 519, 528-36, 148 USPQ 689, 693-96); In re Ziegler, 992, F.2d 1197, 1200-03, 26 USPQ2d 1600, 1603-06 (Fed. Cir. 1993)). Accordingly, a complete claim should contain some indication of the practical application for the claimed invention. In claim 1, lines 6-7 only requires "calculating a temperature of the first heating device using the measured change in the at least one electrical characteristic." and does not produce useful, concrete and tangible results. For example, the results were not stored or communicated to the user.

**Claims 25-33 and 55** are rejected under 35 U.S.C. 101 because the claimed invention as a whole must accomplish a practical application. That is it must produce a "useful, concrete and tangible result." State Street, 149 F.3d at 1373, 47 USPQ2d at 1601-02. The purpose of this requirement is to limit patent protection to inventions that

possess a certain level of "real world" value, as opposed to subject matter that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research (Brenner v. Manson, 383 U.S. 519, 528-36, 148 USPQ 689, 693-96); In re Ziegler, 992, F.2d 1197, 1200-03, 26 USPQ2d 1600, 1603-06 (Fed. Cir. 1993)). Accordingly, a complete claim should contain some indication of the practical application for the claimed invention. In claim 1, lines 6-7 only requires "calculating a temperature of the heating transistor using the measured change in the at least one electrical characteristic." and does not produce useful, concrete and tangible results. For example, the results were not stored or communicated to the user.

**Claims 53 and 59** are rejected under 35 USC § 101 because they are directed to non-statutory subject matter.

The descriptions or expressions of the programs are not physical "things." They are neither computer components nor statutory processes, as they are not "acts." Being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer, which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. Accordingly, it is important to distinguish claims that define

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 1-18, 24-35, 37-43 and 47-59** are rejected under 35 U.S.C. 102(e) as being anticipated by Baltes et al. (U.S. Pub. No. 2004/0075140).

**As per claims 1-4, 9, 24 and 59**, Baltes et al. teach thermally coupling a first heating device to a first sensing device (see paragraphs [0036]; [0038]; and [0070]), generating heat at the first heating device (see paragraph [0036]), measuring a change in at least one electrical characteristic of the first sensing device caused by the heat generated at the first heating device (see paragraph [0095]), and calculating a temperature of the first heating device using the measured change in the at least one electrical characteristic (see paragraph [0106]).

**As per claims 5 and 10**, Baltes et al. further teach that the measuring step includes measuring a series of measurements between the first sensing device and the first heating device at varying distances (see paragraphs [0079]-[0081]).

**As per claim 6**, Baltes et al. further teach that the first heating device and the first sensing device are a field effect transistor (see paragraph [0036] and page 8, claim 8, lines 1-3).

**As per claim 7**, Baltes et al. further teach that the at least one electrical characteristic comprises drain current versus gate bias voltage (see paragraph [0096]).

**As per claim 8**, Baltes et al. further teach that the at least one electrical characteristic comprises sub-threshold voltage slope swing (see paragraph [0106]).

**As per claims 11-18, 25, 27-29 and 31-33**, Baltes et al. further teach that calibrating the first sensing device by measuring a particular electrical characteristic of an active region of the first sending device held at a known ambient temperature (see paragraphs [104]-[0106] and [0077]).

**As per claim 26**, Baltes et al. further teach that the calculating step is further based on a temperature versus power level relationship for the heating transistor based on an extrapolated form fitting curve (see paragraphs [0095] and [0109]).

**As per claim 30**, Baltes et al. further teach that thermally coupling the heating transistor and the measurement transistor is through silicon and comprises thermally coupling the heating transistor to the measurement transistor through a prescribed length of silicon (see paragraph [0094]).

**As per claims 34, 35 and 37-43**, Baltes et al. further teach a silicon island (see paragraph [0074]), and at least one pair of transistors, each pair of the at least one pair of transistors comprises a transistor configured to generate heat and a transistor configured to sense temperature (see paragraphs [0036]; [0038]; [0084]; [0072]; and page 8, claim 8, lines 1-3), wherein each transistor of each pair of transistors is arranged a prescribed distance from its corresponding transistor (see paragraphs [0079]-[0083]).

**As per claims 47-52**, Baltes et al. further teach three silicon sections (see paragraph [0075]); three pairs of active regions, wherein each pair of active regions is arranged on a respective silicon section, wherein each pair of active regions is configurable to produce and sense heat; and three thermal conductors, wherein each thermal conductor is arranged between each active region of each respective pair of active regions (see paragraphs [0075] and Fig. 3).

***Allowable Subject Matter***

4. **Claims 19-23 and 44-46** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

**Regarding claims 19, 22, 23 and 44**, none of the prior art of record teaches or suggests calculating a temperature of the first heating device with the first number of contacts and the second number of contacts using the measured change in the at least one electrical characteristic, and extrapolating results of the measurement obtained with the first number of contacts and the second number of contacts to zero contacts, in combination with the rest of the claim limitations.

**Regarding claims 20 and 45**, none of the prior art of record teaches or suggests determining an offset between the first heating device and at least a second heating device, each having a different number of contacts, and extrapolating the offset to zero contacts.

**Regarding claims 21 and 46**, none of the prior art of record teaches or suggests the measurement step includes establishing an amount of temperature change per contact between the first heating device and a second heating device having a different number of contacts and the calculating step includes extrapolating results of the measurement step to zero contacts to determine an actual device temperature without an offsetting effect of the contacts.

### ***Response to Arguments***

5. Applicant's arguments filed 9/5/06 have been fully considered but they are not persuasive.

Applicant argues that Baltes et al. do not teach calculating a temperature of the first heating device using the measured change in the at least one electrical characteristic.

The Examiner disagrees with the Applicant's argument because Baltes et al. teach this feature in paragraph [0106], where the electrical characteristic is the  $V_{be}$ .

Applicant argues that Baltes et al. do not teach calibrating the measurement transistor by measuring a particular electrical characteristic of an active region of the measurement transistor with the measurement transistor held at a known temperature and incrementally measuring a change in the at least one electrical characteristic of the measurement transistor caused by the heat generated at the heating transistor; and calculating a temperature of the heating transistor using the measured change in the at least one electrical characteristic.



Examiner sees that Baltes et al. teach this feature in paragraphs [0106], [0094] and [0095].

Applicant argues that Baltes et al. do not teach the transistor configured to generate heat and the transistor configured to sense temperature being arranged on the silicon island and a common source contact being arranged on the silicon island and leading to the source of both the transistor configured to generate heat and the transistor configured to sense temperature.

Examiner sees that Baltes et al. teach this feature in paragraphs [0036], [0094] and [0095].

Applicant argues that Baltes et al. do not teach at least one sensing field effect transistor arranged within the at least one silicon island corresponding to each heating field effect transistor of the at least one heating field effect transistor, wherein each sensing field effect transistor is arranged a prescribed distance from its corresponding heating field effect transistor and each sensing field effect transistor is configurable to sense a temperature.

Examiner sees that Baltes et al. teach this feature in paragraphs [0036], [0084] and [0085].

Applicant argues that Baltes et al. do not teach three silicon sections; three pairs of active regions, wherein each pair of active regions is arranged on a respective silicon section, wherein each pair of active regions is configurable to produce and sense heat; and three thermal conductors, wherein each thermal conductor is arranged between each active region of each respective pair of active regions.

Examiner sees that Baltes et al. teach this feature in paragraphs [0070] and [0075].

Applicant argues that Baltes et al. do not teach arrange a common source contact on a SiGe island, the common source contact leading to a source of both a first heating device and a first sensing device.

Examiner sees that Baltes et al. teach this feature in paragraphs [0070], where, various Si-substrates can be used, which would include SiGe island.

***Contact information***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohamed Charioui whose telephone number is (571) 272-2213. The examiner can normally be reached Monday through Friday, from 9 am to 6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S Hoff can be reached on (571) 272-2216. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

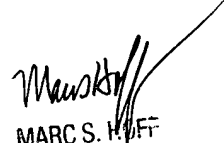
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11/19/06

  
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